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ABSTRACT

This paper provides a review of the theoretical discussions and practical studies relating to fluency instruction and reading development. The basic research strategy was to survey the range of definitions for fluency, the primary features of fluent reading, and studies that have attempted to improve the fluency of struggling readers in one of three common groupings--individually, as dyads, and in redesigns of classroom instruction. The paper encountered a range of theories supporting the role of fluency in the reading process and many studies that have attempted to improve fluency and, thereby, to improve reading more generally. It finds that: (1) fluency instruction generally seemed to be effective, although it is unclear whether it is successful because of specific instructional features or because fluency instruction involves children in reading increased amounts of text; (2) assisted approaches, such as reading-while-listening, seemed to be more effective than nonassisted approaches, such as repeated reading; (3) repetitive approaches did not seem to hold a clear advantage over nonrepetitive approaches; and (4) effective fluency instruction moved beyond automatic word recognition to include rhythm and expression, or what linguists refer to as the prosodic features of language. Appendixes contain charts listing characteristics (including number of subjects, reading level of subjects, material read, and results) of repeated reading and assisted reading studies. (Contains 117 references, 2 notes, and a table of data.) (Author/RS)

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A Review of Developmental and Remedial Practices

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CIERA REPORT #2-008

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CIERA Inquiry 2: Home and School
How do children become fluent readers? What instructional strategies are effective in promoting fluency among beginning readers?

The purpose of this paper is to provide a review of the theoretical discussions and practical studies relating to fluency instruction and reading development. Our basic research strategy was to survey the range of definitions for fluency, the primary features of fluent reading, and studies that have attempted to improve the fluency of struggling readers in one of three common groupings—individually, as dyads, and in redesigns of classroom instruction.

In conducting this review, we encountered a range of theories supporting the role of fluency in the reading process and many studies that have attempted to improve fluency and, thereby, to improve reading more generally. We found that (a) fluency instruction generally seems to be effective, although it is unclear whether it is successful because of specific instructional features or because fluency instruction involves children in reading increased amounts of text; (b) assisted approaches, such as reading-while-listening, seem to be more effective than nonassisted approaches, such as repeated reading; (c) repetitive approaches do not seem to hold a clear advantage over nonrepetitive approaches; and (d) effective fluency instruction moves beyond automatic word recognition to include rhythm and expression, or what linguists refer to as the *prosodic features of language*.

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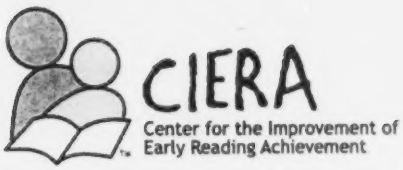

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Fluency: A Review of Developmental and Remedial Practices

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The process of becoming literate can be conceptualized as a series of qualitatively different stages through which learners progress as they become increasingly proficient with print (Chall, 1996b; Ehri, 1998; Harris & Sipay, 1990; Juel, 1988). One of the primary advances in this process involves the shift from dealing with words on a word-by-word basis to an accurate, rapid, and expressive rendering of text. In other words, learners develop such familiarity with print that they achieve fluency in their reading. Fluent reading may underlie or assist in effective engagement with text (LaBerge & Samuels, 1974). The purpose of this paper is to review the literature examining how children move toward fluent reading. It will incorporate both theoretical discussions and empirical studies relating to fluency research. Specifically, to accomplish this purpose, we have reviewed the theoretical accounts of reading that include an important role for fluency in the reading process and studies that have attempted to facilitate its development. We will stress instructional approaches to developing fluency. Although fluency instruction was discussed in the 1950s (e.g., Durrell, 1956) and probably earlier, the two major approaches to developing fluency were developed in the late 1960s to early 1970s. Repeated readings (Samuels, 1979) and assisted reading (Heckelman, 1969) are the basis for much of the instruction in this area. We will review the research on these two approaches, as well as later variants, in order to understand how fluency develops and how it relates to reading comprehension.

Stages of Reading Development

Reading development can be viewed as a series of qualitatively different stages through which learners proceed (Harris & Sipay, 1990). Development in each stage is dependent upon the concepts learned in previous stages; likewise, each stage is prerequisite for the learning that follows. Although a number of stage models have been proposed, we will focus on Chall's

(1996b) stages of reading development since this model provides a comprehensive view of the reading process as well as a strong theoretical underpinning for the view of fluency that will be presented here. Chall's model is a broad one, and it will be useful to focus more specifically on the growth of word recognition as well. Therefore, the description of stages presented here will be followed by a brief outline of Ehri's (1995, 1998) phases of sight word learning and the contribution that automatic word recognition makes to fluent reading.

Chall's Model of Reading Development

According to Chall (1996b), there are six stages through which readers proceed, each of which emphasizes a particular aspect of reading development. The first is an early reading or emergent literacy stage; Chall calls this initial stage of literacy learning *prereading*. This period encompasses the literacy behaviors that are developed prior to formal instruction.[1] That is, the learner develops a foundation that will allow later instruction to proceed in a meaningful manner. For example, children develop insights into the reading process that include concepts about print, phoneme awareness and book-handling knowledge. Further, they come to recognize that print represents language and carries the story's message. Next comes the initial stage of conventional literacy or the beginning of formal reading instruction. At this stage, the instructional emphasis is upon developing learners' recognition of basic sound-symbol correspondences while providing them with sufficient opportunity to establish their decoding ability.

Following this is a period called *confirmation and fluency*, or *ungluing from print* (Chall, 1996b, p.18) in which readers confirm what is already known in order to develop their fluency. Having established their accuracy in decoding during the previous stage, learners must now develop their automaticity with print. Further, as their reading becomes increasingly less halting, they develop the ability to represent what is read in ways that imitate natural or conversational rhythms. In other words, they are able to make use of prosodic features such as appropriate phrasing, stress, and intonation in their reading. Once learners have established this level of comfort with print, it becomes far easier for them to construct meaning from a given text than when they are still struggling with word identification. This stage will be the focus of the present review.

At this point in the learning process, students are presented with increasing amounts of expository text. In fact, there is a precipitous shift in the majority of school systems in the states from reading for enjoyment to reading for instruction. Chall calls this stage of development *reading for learning the new*. The focus of the curriculum shifts to the understanding of content area material, and students are expected to gain proficiency with increasingly complex texts. However, throughout this period, much of the information is presented from a single perspective, often by way of introduction to a subject.

As students acquire a solid base of knowledge in a given area, they are increasingly likely to be exposed to a number of sources on that subject. This stage incorporates what Chall refers to as *multiple viewpoints*. It is

here that readers begin to deal with a variety of viewpoints regarding a given topic and learners are expected to critically evaluate these sources. The final stage in Chall's model is that of *construction and reconstruction.* It is during this stage that an individual begins to synthesize the myriad viewpoints presented in texts in order to determine their own perspective on a given subject, a skill that is essential if a learner is to develop into a critical reader.

According to Chall's model, after the learners have established a basic familiarity with sound-symbol correspondences, they need to focus on automatizing their decoding ability. This period of development is not for the learning of new skills, "but for confirming what is already known to the reader" (Chall, 1996b, p.18). Such practice allows learners to gain comfort with print, thereby enabling the transition from learning to read to reading to learn (Chall, Jacobs, & Baldwin, 1990) to proceed smoothly. Without such automatic processing, students will continue to expend a disproportionately large percentage of their attention on decoding which, in turn, leaves them with an inadequate amount for comprehension (Adams, 1990; LaBerge & Samuels, 1974; Stanovich, 1980, 1984). In other words, fluency is prerequisite if learners are to succeed at the primary purpose of reading, the construction of meaning from text (Allington, 1983; Samuels, 1988; Schreiber, 1980).

Ehri's Phases of Sight Word Development

As they progress within the fluency (unplugging from print) stage and develop automaticity of sight word reading, children seem to go through a series of phases. We are defining sight words as does Ehri (1995)—as all words that have been recognized accurately on several occasions (i.e., words that are in one's instant recognition repertoire)—rather than using the more common definitions of either words with irregular spellings or words that are recognized as a result of their visual features or a particular method of instruction. Ehri suggests that words become sight words through a thorough analysis of their orthographic structure. The resulting mental representation enables a reader to access the word quickly and automatically. She further argues that, upon each additional encounter, the sight of such words triggers the memory of these words in the learner. This identification includes information about the word's spelling, pronunciation, and meaning. However, the establishment of a complete representation does not occur immediately. Instead, Ehri proposes that such a full depiction occurs in four distinct phases: prealphabetic,[2] partial alphabetic, full alphabetic, and consolidated alphabetic.

The prealphabetic phase corresponds to Chall's (1996b) early reading stage. During this phase, beginning readers remember sight words by making connections between certain visual attributes of a word and either its pronunciation or its meaning (e.g. the tail at the end of the word *dog*, or the two eyes in the middle of the word *look*). It is considered to be prealphabetic because letter-sound relationships are not involved in the recognition process. This can be an effective strategy as long as the number of words encountered remains low; however, it becomes increasingly ineffective as a child's repertoire of sight words increases.

Following the visual cue phase, there is a shift to the second phase, that of partial alphabetic recognition. At this point, students begin to read sight words by making the connections between some of the letters in written words—usually the initial and/or final letters because of their salience—and their corresponding sounds. The advantage here is that the alphabetic system is available to aid in word recognition. This phase is enabled both by knowledge of letter names and a certain amount of phonological awareness (Stahl & Murray, 1998). Since readers at this stage lack a full knowledge of the spelling system and the ways in which to segment and match phonemes and graphemes, this form of sight word recognition remains incomplete.

As learners continue to develop an understanding of the alphabetic system, they move toward full alphabetic coding. This parallels the initial stage of conventional literacy in Chall's model. At this point, readers recognize how most graphemes represent phonemes in conventional spelling. This allows readers to easily recognize different words with similar spellings (e.g. *bat, bait,* and *brat)* because each word's representation is sufficiently complete. It further enables them to read new words by determining how the unfamiliar spellings will be pronounced. However, while learners at the full alphabetic phase can decode words, those words that are encountered sufficiently often become sight words. As such, recognition is immediate. Such immediate recognition also occurs for those words that are phonetically irregular and therefore not decodable using sound-symbol correspondence rules.

During the final phase, the consolidated alphabetic phase, learners come to recognize letter patterns that occur across different words as units; this becomes part of their generalized knowledge of the orthographic system. This final advance reduces the memory load for the reader, making it easier to learn new words and speed up the process of word recognition by increasing their awareness of the ways letters co-occur in the spelling system. This final phase of sight word development ensures that the learner establishes automatic and accurate word recognition that is integral to the reading process.

Perfetti (1992) argues that readers may need to proceed through these phases of development with every word in order to assure that each is processed accurately and automatically. The final phase of word recognition, consolidated alphabetic coding, corresponds with the confirmation and fluency stage of Chall's model. Such accuracy and automaticity are essential components of fluent reading; however, we will argue that they are necessary but not sufficient conditions for fluency.

Fluency as a Factor in the Reading Process

Given that the ultimate goal of reading is the construction of meaning (Anderson, Hiebert, Wilkinson, & Scott, 1985), it is important to assess the role fluency plays in comprehension. There are two primary theories that suggest how fluency contributes to a reader's understanding of text, each of which emphasizes one of fluency's component parts. The first, and better known, of the two theories stresses the contribution of automaticity to fluent reading, whereas the second focuses upon the role of prosody.

Although an exact definition of fluency has yet to be agreed upon, there does seem to be a consensus regarding its primary components: (a) accuracy in decoding, (b) automaticity in word recognition, and (c) the appropriate use of prosodic features such as stress (some words receive more emphasis than others—the RED bandana as contrasted with the red BANDANA), pitch (rising and falling intonation patterns—"She's frightened." Contrasted with "She's frightened!" or "She's frightened?") and juncture (appropriate text phrasing). When reviewing the theories relating to fluency's role in the overall reading process, it is important to tease out the various ways these components may contribute to a learner's ability to interpret text. There is a rich literature showing the contribution of accurate word recognition to reading comprehension (Johns, 1993) and enjoyment of reading (Nell, 1988). This will not be reviewed here. Instead, we will concentrate on the relative importance of automaticity and prosody to comprehension.

Contribution of automaticity

Proficient readers have certain features in common; they not only read accurately, but their recognition of words is automatic as well. The question is, how does this automaticity contribute to the primary goal of reading, comprehension of text? An individual has a limited amount of attention available for any given cognitive task (LaBerge & Samuels, 1974; Perfetti, 1985; Stanovich, 1980). Therefore, attention expended upon one activity is, necessarily, attention unavailable for another.

In the case of reading, an individual is required to perform at least two interdependent tasks; the reader must determine what words constitute the text while simultaneously constructing meaning. As such, the greater the amount of attention expended upon decoding, the less there is available for comprehension. In order to ensure that readers have enough attention to understand texts adequately, the argument continues, it is necessary for them to develop decoding to the point where each word is recognized instantaneously. Once this occurs, they will have the necessary attention to focus upon the sense or meaning of the text.

According to Stanovich's interactive-compensatory model (Stanovich, 1980), information from multiple sources is available for aiding readers in their construction of meaning. This is true at each stage of development and presumes that learners will make use of information from orthographic, phonological, semantic, and syntactic sources (see Adams, 1990). Ideally, readers should recognize words automatically. If they do not, then they must rely on contextual information. However, as more mental resources are devoted to contextual analysis in order to identify words, fewer of these resources are available for comprehension. It follows then, that until readers achieve automaticity in word recognition, they will necessarily depend more on alternative knowledge sources in order to figure out what the words say. This refers only to the use of context as an aid to identifying words already in a child's lexicon, not to the use of context in learning new word meanings. Stanovich would argue that automatic word recognition allows readers to concentrate on the meaning of text, rather than on identifying words. Thus, automatic word recognition allows one to focus contextual analysis on constructing meaning, rather than on decoding (see also Adams, 1990).

The question becomes, How do learners make the shift from decoding accurately but deliberately to decoding automatically? According to the automaticity theorists, the best way to ensure this transition is through extensive practice. As with any skill that requires an individual to coordinate a series of smaller actions to create a unified process, it is practice that allows the learner to develop expertise. In terms of reading, this practice consists primarily in providing successive exposures to print. As letters, and later words, become increasingly familiar to the learner, less and less attention needs to be directed toward processing text at the orthographic level. This ability to complete a process without conscious attention fulfills LaBerge and Samuels's (1974) criterion for automaticity. In this way, automaticity theory accounts for two of the components of fluent reading—accurate decoding at a sufficient rate. It further posits an explanation for automaticity's role in text comprehension. However, there is an important aspect of fluency that this theory does not attend to, that of prosody.

Contribution of prosody

Although automaticity theory accounts for the accurate and effortless decoding that fluent readers exhibit, it fails to provide a sufficient explanation of the role prosody plays in the reading process. When an individual provides a fluent rendering of a text, there is a tacit understanding that they are doing more than simply reading the words quickly and accurately; they are also reading with expression. Implicit in the term "reading with expression" is the use of those prosodic features that account for the tonal and rhythmic aspects of language (Dowhower, 1991).

Prosody is composed of a series of features including pitch or intonation, stress or emphasis, and tempo or rate and the rhythmic patterns of language, all of which contribute to an expressive rendering of a text (Allington, 1983; Dowhower, 1991; Schreiber, 1980, 1987, 1991). Additionally, prosodic reading includes appropriately chunking groups of words into phrases or meaningful units in accordance with the syntactic structure of the text. Taken together, these features are classified as suprasegmental since they extend over more than one speech sound. Given this understanding of what constitutes prosody, it is necessary to determine the role prosody plays in the development of fluency and the ways in which these features contribute to the construction of meaning from a text.

Prosody may also provide a link between fluency and comprehension. Chafe (1988) speculates that, in order to read a sentence with intonation, one must assign syntactic roles to the words in the sentence. The assignment of syntactic roles is a key component of microprocessing, or the mental parsing of a text into hierarchically ordered propositions (Kintsch, 1998). Schreiber (1987) also suggests that the explicit presence of prosodic cues may be one crucial difference between speech and reading, and one of the reasons that speech is easier to understand. However, Schreiber reports that the evidence supporting a link between prosody and microprocessing is weak, with some studies finding links between the use of prosodic features and syntactic comprehension and others failing to find such a link.

Dowhower (1991) identifies six distinct markers that constitute prosodic reading: pausal intrusions, length of phrases, appropriateness of phrases, final phrase lengthening, terminal intonation contours, and stress. From a linguistic perspective, readers who use these markers appropriately are capable of making the connection between written and oral language. In

other words, they are able to transfer their knowledge of syntax from speech to text by effectively applying these features to their reading. Such readers can produce a rendering of text that maintains the important features of expressive oral language in addition to reading it accurately and at an appropriate rate.

Prosody's role in fluent reading

It is commonly noted (Allington, 1983; Chall, 1996b; Samuels, 1988) that children who have not achieved fluency read either in a word-by-word manner or by grouping words in ways that deviate from the type of phrasing that occurs naturally in oral language (Clay & Imlach, 1971; Dowhower, 1991). However, studies indicate that young children are highly attuned to the use of prosodic features in speech. In fact, research indicates that infants under a year old use prosodic features as a primary cue to the syntactic structure of their language and that their babbling follows the characteristics inherent in the prosody of their primary language (Dowhower, 1991; Schreiber, 1987; Schreiber & Read, 1980). Further, Read & Schreiber (1982) and Schreiber (1987) have indicated that children are not only highly attuned to prosodic elements in oral language, but that they are actually more reliant on them for determining meaning than are adults.

Given children's sensitivity to prosody in oral language, it seems reasonable to assume that they are equally dependent upon these features in determining the meaning of text (Allington, 1983; Dowhower, 1991; Schreiber, 1991). In fact, appropriate phrasing, intonation, and stress are all considered to be indicators that a child has become a fluent reader (Chomsky, 1978; Rasinski, 1990b; Samuels, Schermer, & Reinking, 1992). The reasoning behind this emphasis is that such readings provide clues to an otherwise invisible process; they act as indicators of the reader's comprehension. Given that a fluent reader is one that groups text into syntactically appropriate phrases, this parsing of text signifies that the reader has an understanding of what is being read.

It is unclear whether prosody is a cause of comprehension or a consequence. If it is a cause of comprehension, then training children to read with appropriate prosodic stress should enable comprehension. If it is a consequence, then such training might not transfer to comprehension. This will be examined in our review.

Research on Fluency Instruction

One approach to examining the relative effects of automaticity and prosody to the development of fluency and comprehension is to examine the instructional research. A number of different approaches have been used to improve children's fluency. Among these are approaches such as repeated readings (Samuels, 1979) and assisted reading (Chomsky, 1978; Heckelman, 1969, 1986;) which have primarily been used with clinical populations or children with reading problems, and approaches such as the Oral Recitation Lesson (Hoffman, 1987) and Fluency-Oriented Reading Instruction (Stahl, Heubach, & Cramond, 1996) which are used with entire classes. There have been other studies which attempted to improve children's speed of word

recognition in isolation (e.g., Fleisher, Jenkins, & Pany, 1979-80) and approaches which segmented text to enable children to identify pausal units in the text (e.g., O'Shea & Sindelar, 1983). We will use these studies to inform our knowledge of the issues related to fluency development.

Method

To obtain all the studies we could find relating to instructional approaches to fluency development, we first undertook a search of both the ERIC and the PsychLit databases for any articles that referred to reading fluency. As we began to locate these articles, we either read through the abstracts or briefly scanned the papers to confirm that the contents were appropriate for further review and analysis. In addition, if the article was to be included, the bibliography was used as a means of cross-checking references. In this way, we were able to locate a number of articles that were not identified in the initial search. The articles that emerged from this search process fell into four broad categories: theoretical bases of fluency development, research pertaining to the validity of these theories, recommendations for classroom practice, and intervention studies. Given our purpose, we chose to concentrate on intervention studies in order to determine the overall effectiveness of fluency instruction.

When deciding whether a given article should be included as part of this review, we instituted both inclusionary and exclusionary criteria. As mentioned above, we selected studies that focused upon evaluating strategies designed to promote readers' fluency development. This included studies that examined the development of either the automaticity or prosodic components of fluent reading or some combination of the two. Methods and representative studies are presented for each type of intervention, along with a summarization of the results.

We chose not to consider articles that dealt with either external- or self-correction strategies, since such studies focus upon components of the reading process that lead to more effectively attending to the text rather than toward a fluent rendition of the reading (e.g. Mudre & McCormick, 1989). Nor did we include studies that focused exclusively on training accurate word recognition. It is reasonably well established that teaching children to be more accurate at recognizing words leads to improved comprehension (e.g., Chall, 1996a).

We intended to conduct a meta-analysis but did not, for three reasons. First, we found relatively few studies with control groups. Baseline studies can be submitted to meta-analytic techniques (e.g., Scruggs, 1987), but these studies cannot be combined with control group studies. We felt that two separate analyses might be more confusing than enlightening. Second, the effect sizes we calculated fluctuated widely, from 0.13 to 2.79. High effect sizes are likely due to a lack of variance in the control condition, leading to exaggerated estimates of effect. These few effect sizes over 1.00 would have to be eliminated from the analysis to avoid their having an excessive influence on the calculated effect. Finally, there were a number of different conditions used as controls, from no-treatment to having the students spend an equivalent amount of time in nonrepetitive reading. These different control condi-

tions made it difficult to come up with a common metric, as should be done in a meta-analysis. Instead, we used vote counting procedures to analyze the data, combined with interpretive synthesis of the studies themselves.

Studies

We found 58 studies dealing with assisted reading, repeated reading, or classroom interventions designed to improve fluency. In addition, we found 9 studies dealing with segmented text and 4 studies dealing with speeded isolated word recognition. Thus our corpus consisted of 71 studies.

Segmented text and isolated word recognition studies were analyzed separately. Our logic in doing so goes like this: If fluency-based instruction affects microprocessing, then we might also expect to find effects in studies using segmented text—that is, text broken up by phrases. If fluency instruction improves comprehension by helping students develop automatic word recognition, then we might see similar effects from studies in which readers' word recognition was speeded up through practice of reading words in isolation.

Table 1: Studies With and Without Control Groups

	Control Group	No Control Group	Total
Repeated Reading	15	18	33
Assisted Reading	7	8	15
Classroom Interventions	4	6	10
Total	26	32	58

There are several reasons for the preponderance of studies without control groups. Repeated readings and assisted readings were developed as clinical approaches for working with children with reading problems (e.g., Dahl, 1979). Thus, testing their effectiveness with targeted children using baseline or multiple baseline designs is appropriate. In other cases, researchers compared different variations of repeated reading (Rashotte & Torgesen, 1985). In another case, students involved in a pilot study made so much gain as to make a control group seem to be unethical (Stahl & Heubach, in press).

Authors who used baseline designs did test for statistical significance, but the lack of studies with a control in this literature as a whole is problematic. Baseline designs are useful in evaluating the effectiveness of approaches for children who are in small, heterogeneous populations, such as children with learning disabilities or reading problems. There is an assumption in such designs of a null hypothesis in which the child would make no growth over the period of instruction. This may be tenable in the case of children with severe reading problems, but not tenable with a more average population. Chomsky's (1978) study illustrates this point. She used a set of taped readings to bring children with reading problems to fluent reading. She found significant improvement over time. But this improvement was equivalent to 6 months over a 10-month school year. Thus, her students, although ahead

of where they started, were even further behind their classmates. Similarly, in Blum et al.'s (1995) study, although all children made significant progress, only one of the five participating children progressed beyond the preprimer level during the 19 weeks of the study. Neither result would be the accelerated progress needed by children who are behind their classmates in reading (Clay, 1993).

Fluency Instruction as Remediation

The studies of fluency instruction fell into two overarching categories: those that dealt with fluency training as a means of remediation for individuals, and those designed for classrooms. Further, these studies consist of two types of interventions: those that build upon independent learning, and those that provide learners with a model of fluent reading behaviors. Additionally, studies looked at a range of indicators to determine reading improvement, including measures of accuracy, rate, prosody, and comprehension. In order to lend cohesion to this field of inquiry, studies will be categorized, first, in terms of whether their reading methods were designed for individual learners or for dyads, and, secondly, according to the type of intervention provided. They also will be discussed, insofar as is possible, in terms of their effectiveness regarding both near transfer—that is, improvement on fluency measures such as increased reading rate on previously unread texts—and far transfer, such as improvement in comprehension on new material.

According to Dowhower (1989), interventions designed to promote fluent reading can be classified primarily as assisted or unassisted reading strategies. Unassisted, or independent, repeated readings rely upon learners' ability to improve their accuracy, rate, and prosody on their own, whereas assisted readings provide a direct model of fluent reading for the learner in the form of a mentor, a taped recording of the text, or another form of speech feedback.

Unassisted Repeated Readings

Perhaps the best known of the reading interventions designed to support fluency development is repeated readings. This is a strategy that relies upon independent practice of text. The basic method of repeated readings was developed by Samuels and Dahl (Dahl, 1979; Samuels, 1979) in an attempt to apply LaBerge and Samuels's (1974) automaticity theory to practice. Samuels and Dahl noted that classroom practice often consisted of students reading new text on a daily basis in the hope that they will improve their word recognition skills. However, it struck them that, by increasing the amount of practice on a given passage, students might be able to improve not only their accuracy but their fluency as well. Growth in fluency was to be measured through the establishment of a speed criterion that, if effective, should lead to an increase in reading rate.

They developed a process in which students were required to repeatedly read a 100-word passage until they reached the criterion rate of 100 words per minute (wpm). An initial reading rate of between 35 and 50 wpm was deemed appropriate for the first reading of the passage. Should the learner read outside these initial wpm guidelines, the passage difficulty would be adjusted and the student would be given material at a higher or lower reading level. Similarly, if a student made an excessive number of miscues in a given passage, difficulty levels would be adjusted. Students were expected to read the passage orally to an adult, then reread the passage silently keeping track of the number of rereadings. Upon completing a given number of practices, they would be asked to reread the passage orally. It was predicted that these students' accuracy and reading rates would continually improve until they achieved the predetermined criterion.

Dahl (1979) first tested this approach in a study designed to evaluate three reading strategies: training in the use of hypothesis testing (the active use of context to predict the identity of unknown words), repeated readings, or isolated word recognition. The study consisted of 32 struggling second-grade readers randomly assigned four to a treatment group. Dahl reported that both the hypothesis testing and the repeated reading conditions, as well as the interaction of the two, produced significant gains on a measure of reading rate and on a traditional cloze test. Additionally, the repeated readings training significantly reduced the number of miscues made. No significant effects were found favoring the isolated word condition.

Given that Samuels and Dahl's original goal was to develop a procedure that would allow for increases in reading rate as well as in the improvement of learners' accuracy, the method of repeated readings proved successful. In fact, the success of the method led to the recommendation of its use as a remedial reading strategy. Samuels (1979) modified the method so that passages of 50 to 200 words could be used and established a more flexible wpm criterion rate, dependent upon the learner's grade level and reading level placement, while continuing to stress speed over accuracy. He also presented it as an effective strategy for improving not only fluency, here defined as automaticity in word recognition (Samuels et al., 1992), but also comprehension. As was noted in an earlier section of this paper, automaticity theory argues that when readers' attention is freed from decoding and they are allowed to focus on the content of the passage, they will then be better able to concentrate on the construction of meaning.

Given the initial success of this method, it was used with both average and learning disabled children. We found a total of 32 comparisons dealing with repeated readings, over half of the total population of studies dealing with fluency reading instruction. These studies are shown in Appendix A. The vast majority of these studies dealt with either students at the second- or third-grade level or older children with reading problems who could be presumed to be reading at a similar level. Thus, researchers generally appeared to target their work toward students in Chall's (1996b) confirmation and fluency stage.

Effects on fluency and comprehension

We found 15 studies that assessed the effects of repeated readings on fluency using a control group. We did a vote count (Light & Pillemer, 1984) of these studies in two ways. First, we counted each study once, using the majority of comparisons to assign it as either showing repeated readings to

produce a significantly higher effect than a control or showing no significant effects. (One study found the control group produced significantly higher results. This was included into the "no difference" group.) Of these 15, 6 studies found that the repeated readings treatment produced significantly greater results than the control, 8 studies failed to find such an effect, and 1 study found that the repeated readings improved fluency for familiar passages, but not for a transfer passage. The second vote counting procedure counted each individual comparison. This procedure gives added weight to studies with multiple comparisons. Eight comparisons found the repeated readings group significantly higher than the control; 21 comparisons failed to find such an effect. This suggests that, overall, repeated readings as a procedure does not produce significantly greater results than a control procedure.

Sometimes the control was a no-treatment control; sometimes the control involved students doing nonrepeated readings (e.g., Mathes & Fuchs, 1993; Rashotte & Torgesen, 1985). As will be discussed below, there may be no difference in effect for nonrepeated readings and repeated readings. This may explain these low effects.

Criteria

The majority of studies also had students read each passage a set number of times, usually three readings, rather than using a criterion as suggested by Samuels (1979). Of the 12 studies that used a control group, 2 used criteria. Of these 2, 1 found a significant treatment difference and 1 did not. Of the remaining 10 studies which had students read a set number of times, 4 found significant differences and 5 did not. Overall, it would seem that neither procedure has an advantage.

Difficulty

We also examined the relative difficulty of the passages. It can be argued that having students read and reread relatively easy passages improves their fluency (e.g., Clay, 1993). It can also be argued that the rereadings scaffold children's word recognition abilities so that they can read more difficult material.

Mathes and Fuchs (1993) compared the use of easy and difficult materials and found no effect for the difficulty of materials. However, they also did not find a difference between a repeated reading treatment and a control group. Rashotte and Torgesen (1985) used relatively easy reading materials, and also failed to find significant differences between their repeated readings treatment and a control group. The remainder of the studies used materials at or above the child's instructional level. Six out of the 11 remaining studies found differences favoring the treatment group. Our best guess is that more difficult materials would lead to greater gains in achievement, but more research is needed on this question.

Comprehension

As noted in Appendix A, the basic results for comprehension mirror those for fluency. Generally, where an increase in fluency was found, there was also an increase in comprehension. The exceptions were in Carver and Hoffman's (1981) study and Dahl's (1979) study, which found effects for microcomprehension (generally cloze) measures, but not for more general comprehension measures (such as standardized tests). This is consonant with the notion that fluent reading would affect the reader's microcomprehension processes, through the assignment of syntactic relations in sentences, but might not affect macrocomprehension processes, which are

more affected by prior knowledge and more global comprehension strategies (see Stahl, Jacobson, Davis, & Davis, 1989). It also may be that the more general measures of comprehension, such as standardized achievement tests, are more resistant to change.

Other findings

Dowhower (1987) not only used rate and accuracy as measures of fluency, but also found that repeated readings had measurable effects on speech pauses and intonation. Herman (1985) found not only effects on speech pauses and rate for read material, but also that repeated readings treatment transferred to previously unread material.

Rashotte and Torgesen (1985) found that students reading texts with a high overlap of words improved in rate and accuracy better than students reading texts with a low overlap. Although these two groups differed significantly, neither was significantly more fluent that a group engaged in nonrepetitive reading. However, Rashotte and Torgesen limited students to four readings of each text; they might have found stronger effects had they had students read a fluency criterion for each text.

Assisted readings

Like unassisted repeated readings, assisted readings emphasize practice as a means of improving accuracy, automaticity, and prosody as well as the learner's understanding of a text. Further, they provide extensive exposure to print. However, unlike traditional repeated readings, assisted reading methods provide learners with a model of fluent reading. There is also a greater amount of variation among the different intervention strategies. In order to maintain a sense of cohesion, we will outline the various methods along with several studies that evaluate the effectiveness of these methods.

We found 15 studies involving assisted reading. Of these, 7 used a control group to evaluate effectiveness of the treatment; 8 did not. These studies are listed in Appendix B.

Neurological impress method or assisted reading

In 1969, Heckelman suggested the neurological impress method as a remedial strategy for disfluent readers, although the term may go back further. Its name reflects a naiveté about neurology—it was supposed to impress the words directly into the student's brain. Nowadays, this notion, and the name, seems quaint, at best. The underlying method is still used in practice. Currently, it is called assisted reading, or even choral reading, since a tutor and tutee read the same material chorally. Under its initial design, the method required that the teacher and student read simultaneously and at a rapid rate. The student was to sit in front of the teacher, both were to hold the book and the teacher was to read into the student's ear. The teacher was to slide a finger under the words and could vary the pace so that sometimes the reading was louder and faster and sometimes it was slower and softer. This joint reading was to continue until the teacher noted the student was becoming tired or uncomfortable. Although some of the research followed this exact procedure, other studies varied in their application of the format.

The first reported study was undertaken by Heckelman (1969) himself. He used the technique with 24 students who were rising seventh through tenth

graders, all of whom were at least three years behind their grade level in reading. Instructors worked with students using the assisted reading strategy for 15 minutes a day, five days a week, for a maximum of 7 1/4 hours as part of a remedial summer program. Students selected their own material, but were encouraged to use relatively easy material at first before graduating to more difficult selections as they became increasingly fluent. Although not all students made "substantial" (Heckelman, 1969, p. 281) improvements, the mean gain was 1.9 years. This indicates that the instructional strategy was successful at developing the student's oral reading fluency and their comprehension as measured by the silent reading section of the California Achievement Test. Other case studies (e.g., Langford, Slade, & Burnett, 1974) found similar results.

Reading while listening

While the above study indicates that assisted reading is quite successful in improving the reading fluency of struggling readers, Hollingsworth (1970) recognized the time-consuming nature of the procedure. Given the requirement of one-on-one teacher support for the method, assisted reading was feasible for use primarily in tutoring situations and did not constitute a viable approach for integration into most traditional classrooms. As such, Hollingsworth redesigned the procedure so that it could be used with up to eight students simultaneously. By using a wireless system, children could listen to a tape recording of a text while allowing the teacher to monitor their reading. To test this modification, Hollingsworth randomly selected eight fourth graders reading at grade level and eight controls matched to these students based upon their scores on a standardized reading test. Results indicated that there were no significant differences on any measure between the students who participated in the assisted reading procedure and those who did not. However, it is important to note that the students who took part in the study were not disfluent readers, but were considered to be achieving as well as their control counterparts. Students reading at the fourth-grade level would be beyond the stage of reading development at which exposure to connected text is deemed necessary to ensure the transition from thoughtful decoding to the fluent rendering of a passage (Chall, 1996b).

Hollingsworth (1970) considered the students' ability to read on grade level to provide the most likely explanation regarding the method's seeming ineffectiveness. In fact, he noted that the technique's success in Heckelman's study may have been the result of the students' need for remediation. He therefore decided to replicate the study using a different population. For his second study, Hollingsworth (1978) selected 20 fourth-, fifth- and sixth-grade students identified by their school district as remedial readers. The students were randomly selected and assigned to either the assisted reading or control condition. The wireless system used allowed 10 students to listen to tape recordings of the passages simultaneously. Hollingsworth further increased the number of sessions from 30 to 62. Beyond this, the investigation followed the exact procedures outlined for his first study (1970). This time, however, there was a significant treatment effect on the standardized comprehension test. In real terms, students using the assisted reading technique made one year's growth over the course of a semester, whereas the other students made only .04 year's growth during the same period. Again, these findings lend credence to the claim that, for students identified as remedial readers, assisted readings are effective in promoting fluency and comprehension development, at least as measured by standardized test scores. How-

ever, these gains do not appear generalizable to students who are already fluent readers.

Chomsky (1978) and Carbo (1981) also used tapes for assisted reading. Chomsky worked with five eight-year-olds who were identified by their teacher as struggling readers. Although all five children—two girls and three boys—had extensive instruction in decoding strategies, they seemed unable to apply their knowledge to connected text. Each of these children was reading one to two years below their grade level in January of third grade, and all professed an intense dislike of reading. Chomsky felt that any successful intervention would necessarily expose them to significant amounts of print while making that print accessible to them. In order to achieve this goal, she made available on tape two dozen books ranging in reading level from second to fifth grade. The children were asked to listen repeatedly to the books until they were able to render the text fluently. The children selected their own books and set their own pace for the assisted repeated readings. They were instructed first to listen to an entire book or chapter from a book before selecting a portion that they wanted to practice. They were then to read along while repeatedly listening to those parts of the story they wanted to rehearse. In addition, she and a research assistant worked with each child on a weekly basis both to monitor progress and to engage the learner in further analysis of the text through language games.

Initially the process was slow and the children had some difficulty coordinating their eye movements with the voices on tape. If they lost their place, they were instructed to return to the beginning of the passage, but, as they became increasingly familiar with their texts as well as the process, it became easier for them to keep track of the story. Four of the children took approximately 20 listenings over a month period to become fluent with their selection, although one child achieved fluency over the course of two weeks. Further, each subsequent selection took the learners less time, until by the fourth or fifth book (or, for one child, the third chapter), students were achieving fluency with their text in approximately one week. Perhaps even more telling, however, was the fact that, according to both parents and teachers, the children were reading independently and were willing to engage in writing activities as well. In addition, all students demonstrated growth on the posttest measures administered as part of the study, but, as noted above, averaged only 6 months gain in fluency and 7.5 months gain in comprehension over the course of 10 months. This may have been greater gain than they had made in previous years, but still is not accelerated progress (Clay, 1993).

Carbo (1981) used a slightly modified approach in a read-along procedure. Her tapes stress phrases, children are instructed to slide their fingers along under the words as a form of tactile reinforcement, and each page is cued to minimize the chances that the listeners might lose their place. She worked with eight learning disabled children over the course of three months using these individualized recordings. During this period, she reported that the students demonstrated gains of 4 to 15 months in word recognition ability, with the average gain being 8 months.

These two studies differ from Hollingsworth's modified assisted reading approach insofar as there is less direct monitoring from the teacher and students are responsible for determining the length and frequency of their sessions. One of the primary concerns regarding such read-along techniques is

that there is no way to ensure active engagement on the part of the learners. Indeed, a number of classroom observation studies (e.g., Evans & Carr, 1985; Leinhardt, Zigmond, & Cooley, 1981) have found that time spent listening to tapes in class does not significantly affect achievement. In these studies, however, students were held responsible for being able to read the text fluently, so it appeared that they did actively participate in the process. Further, anecdotal evidence indicates that the students both enjoyed the taped stories and displayed pride in their abilities and their success.

There were several differences between the Carbo and Chomsky studies. First, Carbo used specially developed tapes in which the stories were read slowly, with cues to turn the page. Chomsky used commercially available taped stories. The materials in Carbo's tapes were chosen to be difficult, but not too far away from the child's ability. Chomsky did not measure the tapes' difficulty, but her taped stories were probably well above the children's reading level.

Carbo reports an average gain of 8 months in word recognition in 3 months' time; Chomsky reports average gains of 6 months in 10 months time in fluency and 7 1/2 months in comprehension. Chomsky's results reinforce our caution about accepting results of improvement over time. Although her students made a significant improvement, it was less than that ordinarily expected in normal progress. Thus, her students were actually further behind their peers at the end of their treatment than they were before.

Closed-captioned television

Rather than designing material that needed to be used in conjunction with a television monitor, Koskinen, Wilson, and Jensema (1985) made use of the closed-captioned option available on a number of television programs with remedial readers in an exploratory study. Ten clinicians taught 35 second through sixth graders as part of a summer reading clinic. Although part of the lessons revolved around making predictions based on plot development and discussions of figurative language use, students were also expected to practice short portions of the script in order to develop fluent renderings of the text. Selected programs included Sesame Street, Scooby Doo, and sitcoms. Since the study was exploratory in nature, no statistical measures were provided. However, anecdotal evidence indicates that the students, many of whom were "turned off learners" (Koskinen et al., 1985, p. 5) not only enjoyed the lessons, but felt they benefited from the strategy. Further, the clinicians also considered the lessons effective in promoting the learners' fluency.

Comparisons of assisted and unassisted repeated readings

Overall, using the same vote counting procedure used for repeated readings, we found that five of the seven studies with a control group using assisted reading found significant treatment differences. When analyzed by number of comparisons, six of the nine comparisons found significant treatment effects. This suggests that assisted reading approaches do produce significant gains in reading achievement.

Two studies (Dowhower, 1987; Rasinski, 1990b) looked at the effectiveness of both repeated readings and reading-while-listening on the development of reading fluency. However, the student populations, the methodology, and the stated goals of the two studies differ.

Dowhower (1987) examined the effects of repeated readings on second graders at the transitional stage of reading development—that is, learners who are in the process of shifting from accurate but deliberate decoding to fluent reading. In designing this intervention, Dowhower chose to look at repeated readings and a reading-while-listening procedure in order to determine the effectiveness of these strategies in promoting fluency on measures of rate, accuracy, comprehension, and prosody. Further, she looked at these measures on both practiced and unpracticed text as well as across a series of passages. Her primary goal was for the students to reread a meaningful passage until their oral production was "fluid, flowing, and facile" (Dowhower, 1987, p. 390).

Students were randomly assigned either to an assisted condition in which they worked with a tape-recorded model or an unassisted condition in which they worked independently but were able to request assistance on difficult words. For the read-along conditions, students were encouraged to practice with the tape until they were comfortable with their reading, after which they were to continue practicing without the tape. Materials consisted of six basal stories with an early second-grade reading level rewritten to maximize equivalency. Students were assessed on rate, accuracy, the number of rereadings necessary to reach a 100 wpm criterion, and their literal comprehension. In addition, a microcomputer was used to determine changes in students' prosody using the following features: pausal intrusions, or inappropriate hesitations within words or syntactical units; the length of phrases, or number of words between pauses; appropriate phrasing, or the use of syntactically and/or phonologically acceptable phrases; phrase final lengthening, in which the last stressed syllable is longer than it would be if the word was located elsewhere in a phrase; and intonation, or the appropriateness of the rise-fall patterns that occur at phrase boundaries, within the sentence, and at terminal markers.

Results indicated that both forms of repeated readings led to significant increases in word accuracy and comprehension from the first to the last reading of the first half of the passage. Gains in reading rate also occurred on the second half of all passages and reached significance for three of the five stories. There was also evidence of minimal gains in accuracy from the practiced to the unpracticed portion of the passages; however, this reached significance for only one trial in the assisted reading condition. Additionally, comprehension gains were significant in two of the five trials for the assisted group and four of the five trials for the unassisted groups. Similarly, there were significant gains across readings for both groups on rate, accuracy, and (for the assisted condition) in comprehension scores. Likewise, the number of rereadings it took for students reach the criterion level significantly decreased across both conditions, and both groups showed mean gains in rate and accuracy from the initial to the final test, all of which were significant. Further, the unassisted group's comprehension score demonstrated a mean gain as well. Importantly, there were few shared words among the passages, but 77% of the words on the final test occurred in the stories.

The prosodic measures produced slightly different results. Pausal intrusions lessened and length of phrases increased significantly for both groups from the initial to the final readings of the stories as well as across readings. Additionally, the assisted group had significantly fewer inappropriate phrases from the initial to the final reading as well as across readings. Further, the

assisted readings condition significantly improved their intonation across readings, while the unassisted group's intonation improved significantly from the initial to the final readings of the passages. Finally, 8 of the 15 students demonstrated significant change as regards the lengthening of the final stressed syllable in a phrase. Overall, the results indicate that both forms of repeated readings are effective at improving rate, accuracy, and comprehension and that these gains transfer to similar but unpracticed passages. Further, these improvements are increasingly substantive over a series of passages. Though both strategies appear to be relatively equivalent on these three measures, the reading-while-listening intervention had a more facilitative effect on the measures of prosodic development.

Following from Dowhower's (1987) work, Rasinski (1990a) compared the effectiveness of repeated reading and reading-while-listening on rate and accuracy. Twenty third-grade students were paired according to both teacher judgment of their reading abilities and their scores on a standardized reading test. As with Dowhower's (1987) research, students demonstrated significant gains in both reading speed and accuracy for both strategies, but no significant differences were reported between the two types of intervention. Given these findings, Rasinski argues that, since both strategies appear to be equally effective and the reading-while-listening strategy is easier to implement, it may prove to be the more efficient aid in assisting readers' transition to fluency.

It is important to make a distinction between the reading-while-listening employed in these studies and listening centers commonly found in classrooms. In these interventions, students had to recite the readings and thus were held responsible for practicing the readings. In listening centers, there are often no criteria for the reading. If students are not held responsible, then they probably will not practice, and thus will not make gains. Thus, classroom observational studies such as those of Evans and Carr (1985) and Leinhardt et al. (1981) found no effect on reading achievement for listening center activities.

Classroom Approaches

Two general approaches have been taken in trying to adapt the principles of fluency instruction to the classroom. First, authors have tried to adapt directly clinical approaches. Assisted reading, rather than repeated reading, has been adapted because of the need for social interaction to manage instruction in a classroom setting. Next, authors have used a variety of techniques, such as echo reading, repeated reading, partner reading, and so on, in an integrated lesson plan. Both approaches show promise.

Classroom Extensions of Assisted Reading

While the assisted reading approaches outlined above incorporate models of fluent reading as aids to reading development, another alternative to individ-

ual repeated readings involves the use of a partner as a means of facilitating fluency development. By modifying the repeated readings approach so that two readers can work together, students are able to receive the type of immediate feedback that is not available when working on unassisted readings or with prerecorded models. This is also a technique that can be effectively adopted in traditional classrooms.

Partner reading

Eldredge and Quinn (1988; Eldredge, 1990) examined a modified version of assisted reading (Heckelman, 1969) in which a classmate was chosen to be the lead reader. The struggling reader, known as the "assisted reader," received support and feedback from a partner. Pairs were changed weekly. The lead readers were selected based on their ability to render the chosen texts fluently. They set the pace for the pair, read in phrases, and indicated each word as it was read. Five schools participated in the study, and second-grade classrooms were randomly assigned either to the dyad reading condition or to a control condition which made use of traditional basal reading groups throughout the course of the school year.

The assisted readers in the dyad classrooms read with partners until they reached the point where they could read grade-level material independently. At this point, they began reading on their own rather than reading with a partner. Significant differences were found between the dyad and traditional basal groups on vocabulary, comprehension, and total reading scores. In real terms, 27 out of the 32 struggling readers participating in the dyad condition achieved scores at or above grade level, but only 6 of the 32 students (19%) in the traditional basal group did so. Again, as a result of the intervention strategy, students were able to read with assistance material that would have been beyond their instructional level had they been working independently.

Koskinen and Blum (1984) implemented a procedure that allowed for paired repeated readings of texts with below average third graders. Students in the repeated reading condition worked in pairs where they learned to select their own texts, to follow the strategy, and to provide both self-evaluations and evaluations of their partners (the procedure is fully described in Koskinen & Blum, 1986). Results indicated that the students in the repeated reading condition not only significantly outperformed the students in a study activities condition, but they made significantly fewer semantically inappropriate miscues.

Hoskisson & Krohm (1974) provide a transition from assisted readings to partner reading. Second-grade students were presented with a series of tape-recorded stories at a read-along center. Tapes were prepared for a number of books; reading levels and pace of narration were adjusted to the individual reading abilities of students in order to assure that struggling readers did not get lost and better readers would remain engaged in the activity. Additionally, students were provided with weekly opportunities to read one of these stories to a peer. Children were partnered with students both at the same reading level and across reading levels. During this period, students performed the practiced text and their partners provided any words that were not recognized. Observations of the students indicated that (a) the slow readers became more confident in their renderings of a text, (b) their reading rates increased, (c) they made more frequent attempts at and were more successful at identifying new words, (d) their listening skills improved, and (e) they appeared to derive more pleasure from their own reading. As with

other forms of assisted reading, this version provided students with the opportunity to develop fluent reading behaviors in their presentation of connected text. Their lessons were extended to a home reading program.

Cross-age reading

Another effective way of encouraging students to repeatedly read a text is by giving them a real purpose for doing so. Such a purpose is provided by the cross-age reading strategy suggested by Labbo and Teale (1990). In this study, the authors invited fifth graders to read aloud to kindergartners from books that were appropriate for the younger participants. Twenty fifth graders experiencing reading difficulties were randomly assigned to one of three groups: cross-age readers; art partners, in which the students worked with the kindergartners on art projects; or a basal reading group, where students participated in their regular basal activities.

Students in the cross-age reading group were prepared for their reading performances in three ways. They were taught to select appropriate texts for their audience, were given opportunities to develop fluency with the books, and determined ways in which they could involve the kindergartners in discussions of the text. According to anecdotal evidence, not only did both the fifth graders and the kindergartners enjoy their experience, six of the cross-age readers "were able to break poor oral reading habits" (Labbo & Teale, 1990, p. 365) as a result of their repeated readings. Further, the cross-age readers made significant gains on a standardized reading measure and produced significantly higher scores than the other two groups. These results indicate that it is possible to integrate repeated readings into a meaningful context that will allow students experiencing reading difficulties to develop their fluency while demonstrating reading growth.

We found two others studies which examined cross-age tutoring, but with less salutary results. Sutton (1991) examined the effects of cross-age tutoring with first and second graders. She reported improvement over time in fluency and the amount of time spent engaged in reading, but did not have a control group. Ramunda (1994) used above average second graders as tutors, but did not find a significant effect on comprehension compared to a control group.

Looking over these three studies indicates that cross-age tutoring appears to be successful with below-grade-level tutors, but does not seem to affect above-grade-level tutors. This may be because the below-grade-level tutors in Labbo and Teale's study were reading relatively difficult materials, but the above-grade-level tutors in Rasmunda's study were reading relatively easy texts.

Integrated Fluency Lessons

Hoffman (1987) describes an oral recitation lesson format to substitute for a traditional basal reader lesson. In this format, the teacher begins by reading the story from a text aloud and discussing its content. In this way, comprehension is dealt with prior to practice in oral reading. The teacher then rereads the story, paragraph by paragraph, with the children following along and echoing back each paragraph. The students then choose or are assigned a portion of the text to master. They practice this text and read it to the

group. They then go on to the next story. On their own, children are to practice the story until they can read it at an adequate rate with no errors. Hoffman reports that the lessons were successful, but does not present statistical data.

Morris and Nelson (1992) found that a program based on the Oral Recitation Lesson, but including partner reading rather than small-group work, also helped children in one class develop word recognition skills. However, they did not use a control group and also did not report statistical tests.

The effects of the oral recitation lesson were examined in two studies by Reutzel and Hollingsworth (Reutzel & Hollingsworth, 1993; Reutzel, Hollingsworth, & Eldredge, 1994). Both of these studies involved second graders. In the first study, the oral recitation lesson was found to be superior to a traditional lesson on measures of fluency and experimenter-designed measures of comprehension, but not on a standardized comprehension test. In the second study, the oral recitation lesson was compared to a Shared Book Experience (Holdaway, 1979). The Shared Book Experience produced significantly higher scores on the word analysis subtest of a standardized achievement test and on an experimenter-developed measure involving answering implicit questions. The Shared Book Experience group also made significantly fewer oral reading errors. There were no significant differences between the groups on measures of fluency, vocabulary, and four other measures of comprehension.

Rasinski, Padak, Linek, and Sturtevant (1994) used a similar format in their fluency development lesson, but instead of using basal reader stories, they used 50- to 150-word texts. Teachers read each text aloud, students and teachers read the texts chorally, and students practiced reading in pairs. Because of the short texts, teachers were able to do all parts of the lesson in a 15-minute session each day. The only gains attributable to the treatment were in reading rate. These students were compared to children getting traditional literacy activities. Differences between the experimental treatment and the control in overall reading level as measured by an informal reading inventory were not statistically significant.

Another program based on Hoffman's (1987) work is the Fluency-Oriented Reading Instruction program (Stahl & Heubach, in press). This approach is an attempt to use repeated readings in a classroom program to develop fluent and automatic word recognition in second graders. The resulting program had three aspects—a redesigned basal reading lesson, a free-reading period at school, and a home reading program.

The redesigned basal reading lesson used the story from the children's second-grade reading text. This text would be difficult for children reading below grade level. With the support provided by the program, however, children who entered second grade with some basic reading ability could profit from a conventional second-grade text. The teacher began by reading the story aloud to the class and discussing it. This discussion put comprehension in the foreground, so that children were aware that they were reading for meaning. Following this, the teachers reviewed key vocabulary, designed comprehension exercises, and performed other activities around the story itself. Sometimes this involved echo reading, or having the teacher read part of the story and the class or group echo it back. Other times, it involved having children read and practice part of the story. Then the story was sent

home and read with the child's parents or other readers listening. For children who struggled, the story was sent home additional times during the week. Children who did not have difficulty with the story did other reading at home on these days.

The next day, the children reread the story with a partner. One partner would read a page while the other would monitor the reading. Then they would switch roles until the story was finished. Following partner reading, the teacher would do some extension activities and move onto another story.

Although this lesson was an important part of the program, it was not the only reading that children did. Later in the day, time was set aside for children to read books that they chose. These were usually easy to read and read for enjoyment. Children sometimes read with partners during this period, as well. This time ranged from 15 minutes in the beginning of the school year to 30 minutes by the end.

Also, children were required, as part of their homework, to read at home. Outside reading was monitored through reading logs, and teachers made sure that the children in this program read at home an average of four days a week for at least 15 minutes per day.

This program was carried out by 4 teachers in two schools during the first year and was expanded to 10 teachers in three schools for the second year. The results from both years were positive. In both years, children gained on average nearly two years in reading growth in the second-grade year, as measured by an informal reading inventory. The effects that this intensive reading experience had on struggling readers are even more gratifying. Over two years, all the children but two (out of a total of 105) who began the second-grade year reading at a primer level or higher were reading at a second-grade level or higher at the end of the year.

Thus, out of six studies that examined the effects of redesigned lessons designed to increase fluency, only three used a control group. Of the controlled studies, only one found clear evidence that the fluency-oriented lessons produced significantly better achievement than traditional instruction or a shared book experience (which was commonly used in basal reading programs at the time). The effects of this instruction are suggestive, especially given the large gains reported by Stahl and Heubach (in press), but these approaches need to be examined in more controlled research.

Discussion

When fluency instruction is compared to the traditional instruction used with basal readers, the results seem clear—fluency instruction seems to improve children's fluency and comprehension. When different approaches to fluency instruction are compared, the results are less clear. Overall, these strategies seem, to a greater or lesser degree, effective in assisting readers at the transitional stage of reading development. These may include students

achieving at their grade level or those experiencing difficulties in becoming fluent readers.

This finding is subject to a caveat. Relatively few studies used conventional experimental or quasi-experimental designs. Many of the studies, from a special education tradition, used single or multiple baseline designs, in which progress is examined over a period of time. These studies can be robust (Neuman & McCormick, 1995), but we find the reliance on this design in an entire body of research to be problematic. Also, in a number of studies in which progress could be compared with a norm, students' progress fell below what would be expected (e.g., Blum et al., 1995; Chomsky, 1978).

Effects of Fluency Instruction

Fluency instruction and the stage model

According to Chall's (1996b) stage model presented at the beginning of this paper, one would expect that fluency instruction would be most effective for children in the confirmation and fluency stage, from the end of grade 1 to grade 3. This proposition is difficult to test since practically all studies used either normally achieving second graders or older children with reading problems who were reading at the second-grade level. This suggests that nearly all of the researchers working with fluency instruction implicitly accepted a stage view and acted accordingly. Of the few studies that used populations outside of this range, the results supported the stage model. Hollingsworth (1970) used average fourth graders, who should have been in the 'reading for learning the new' stage and not in need of fluency instruction, and found that the treatment did not produce significant improvement over a control. He replicated this study in 1974 with below-average fourth graders, who would have been predicted to benefit from this training, and found that they did. Stahl and Heubach (in press) found that their Fluency-Oriented Reading Instruction program was highly effective with children reading at a primer level or higher at the beginning of second grade. Nearly all of those students were reading at the second-grade level by the end of the year. With children reading below the primer level, the approach brought only half to the second-grade level. Teachers dropped children who were reading at an emergent stage from the program, since it did not seem to benefit them at all. Blum et al. (1995) found that only the child who entered their assisted reading treatment with some reading ability (a preprimer level) benefited from the treatment. Both Marseglia (1997) and Turpie and Paratore (1995) found that their repeated readings treatment seemed to work better for the higher level first graders that they worked with than for the lower achieving first graders. This suggests that these fluency interventions work best with children with at least some rudimentary reading skill.

Thus, the results of this review seem to support the stage model. Fluency instruction seems to work best with children between a late preprimer level and late second-grade level. Beyond that or below that level, the results are not as strong. Children need to have some entering knowledge about words to benefit from rereading, but not be so fluent that they cannot demonstrate improvements.

Effects of rereading

We stressed approaches that involved rereading of text, through assisted reading, repeated reading, or approaches which integrate a number of activities into a classroom lesson design. Although these approaches all seem to be effective, it is not clear why they are effective. Specifically, it is not clear whether these studies have their effects because of any particular instructional activities, or through the general mechanism of increasing the volume of children's reading. Fluency instruction may work only by increasing the amount of reading children do relative to traditional instruction. If so, then there may be other approaches which work as well, or better. We know that increasing the amount of reading children do will improve their achievement (Anderson, Wilson, & Fielding, 1988; Berliner, 1981; Taylor, Frye, & Maruyama, 1990). Repeated readings and assisted readings may enable children to read more difficult material than they might otherwise be able to read, or may provide a manageable structure to enable increased amounts of reading.

Several studies compared repeated and nonrepeated reading. Homan, Klesius, and Hite (1993), Mathes and Fuchs (1993), Rashotte and Torgesen (1985), and van Bon, Boksebeld, Font-Freide, and van den Hurk (1991) found no difference in effects between repeated readings of a small number of texts and nonrepetitive reading of a larger set of texts. This suggests that it is not the repetition that leads to the effect, but the amount of time spent reading connected text.

We did not review the effects of paired reading, a nonrepeated assisted reading approach (Topping, 1987; Topping & Whitley, 1990). In paired reading, a more capable reader, usually an adult, works one-on-one with a struggling reader. A paired reading session begins with the tutor and tutee choosing a book together. The book need be only of interest to the tutee. There should be no readability limits (although our experience is that children rarely choose material that is far too difficult). They begin by reading in unison. The child signals the tutor, by touching the tutor or raising a hand or some other prearranged signal, when wanting to read solo. This continues until the child makes an error. Errors are corrected by the tutor providing the word, repeating the sentence in unison and going on. Paired reading has been used in the classroom and by parents. Morgan and Lyon (1979), for example, examined the effects of paired reading in the home. Over the 12 to 13 weeks during which children read with their parents, students made an average gain of 11.75 months in word recognition, and 11.5 months in comprehension, with a range of 10–13 months. Thus, paired reading with parental support can be an effective means of developing the fluency of readers experiencing difficulty with connected text.

Since we did not find studies which compared paired reading directly with assisted reading, and we did not have enough information to do a meta-analysis, we cannot say whether paired reading is more or less effective than assisted reading. Because paired reading does not involve repetition, while assisted reading does, this comparison would be useful in teasing out the effects of repetitive reading.

Relative difficulty of the text

It is also not clear what level the text should be on. Some have argued that having children read easy text improves fluency (e.g., Clay, 1993), but it seems that the most successful approaches involved children reading instructional level text or even text at the frustration level with strong sup-

port (see Stahl & Heubach, in press). Mathes and Fuchs (1993), however, used both relatively easy and relatively difficult texts, and found no effect for text difficulty. More directed work needs to be done to assess the effects of relative difficulty on learning.

It seems important that the practice and the support is provided through either repetitions or through the modeling of fluent reading. Whether that modeling is provided through the use of taped narrations or the support of another individual seems to be less crucial a matter than that it is provided. The provision of such a model seems to allow learners to work within their zone of proximal development (Vygotsky, 1978) and offers the scaffolding that allows them to successfully move beyond the point at which they are able to work independently.

An irony

The "Method of Repeated Readings," as discussed by Samuels (1979, 1988; Samuels et al., 1992), was developed as an approach to translating LaBerge and Samuels's (1974) automatic information processing model into an instructional approach. LaBerge and Samuels's model is based on the notion that automatic processing of words will free up attentional resources which can then be devoted to comprehension. Samuels contended that through repeated readings, children will develop automatic word recognition, thus allowing them to be able to improve their comprehension. As shown in this review, repeated readings and other fluency-oriented approaches do improve comprehension. However, the irony is that they do not appear to improve automatic word recognition, as measured by conventional experimental psychology measures. Dahl (1979) failed to find that repeated readings improved tachistoscopic recognition of words, and neither Dowhower (1989) or McFalls, Schwanenflugel, and Stahl (1996) found that fluency-oriented instruction improved children's response latency to words. Thus, fluency-oriented instruction seems to have salutary effects in a number of areas, but not in the area for which it was intended—rapid recognition of isolated words.

Prosody, Automaticity, and Comprehension

The studies reviewed in this paper have indicated that both the assisted and unassisted methods of fluency intervention have been generally effective in facilitating reading rate and accuracy. Given the amount of repetition or practice with print that they require on the part of learners, these results are not surprising. However, several of these studies have also indicated that they lead to improvements on measures of learners' comprehension. The question then arises: Does this understanding develop simply from the amount of practice students undergo as regards word recognition, or is there something more specific to their reading of connected text and their emerging sense of its relation to oral language that allows this understanding to develop?

If comprehension were improved only by improved automatic word recognition, then teaching children to identify words faster would have an effect on comprehension. A number of studies have examined teaching children to say words faster (Fleisher, Jenkins, & Pany, 1979–80; Levy, Abello, & Lysynchuk, 1997; Spring, Blunden, & Gatheral, 1981). Although children's passage

reading fluency improved in all of these studies, in none of them did children's comprehension significantly differ from that of a control group. In these studies, children were taught to say the words in a list that they knew faster. In contrast, preteaching words that children did not know seems to improve comprehension (e.g., Blanchard, 1981; Tan & Nicholson, 1997). Thus, it seems that more than speed of recognition is involved in the effects of repeated and assisted readings on comprehension.

Another source of information is the research on parsing or segmenting texts. Beginning with Cromer (1970), a number of researchers have found that presenting students with text segmented by phrase units seems to produce better comprehension than conventional text. This effect is especially pronounced for children who are slow but accurate readers (Cromer, 1970; O'Shea & Sindelar, 1983). Segmenting the text may provide the same cues to phrasal structure as prosody does in oral language (Schreiber, 1980, 1987). However, nearly all researchers studied the effects of segmenting text with older children (fourth grade and higher), a different population than that with which we are concerned. O'Shea and Sindelar (1983) was the only study we found wherein researchers worked with primary-grade children. They found that segmented text produced better comprehension than conventional text, as measured by a maze-type cloze test. This suggests that being able to segment text by phrasal boundaries improves comprehension in primary-grade children, but it is an overextension to infer from the results of one study that the effects of fluency instruction on comprehension are due to their effects on prosody.

Given that assisted and repeated readings and parsing of texts both seem to aid learners' comprehension, and speeded recognition of isolated words does not, we would argue that it is more than simply automaticity and accuracy, or measures of rate and percentage of miscues, that allow this understanding to develop. Further, the discussion surrounding prosody as a necessary component in children's ability to understand oral language and its role in language acquisition add credence to the argument that prosody is equally necessary to children's development of an understanding of written text. Finally, given that fluent oral reading is considered to be expressive as well as quick and accurate, and that prosodic features are, to a large extent, responsible for such expression, it is important to consider a definition of fluency that encompasses more than rate and accuracy.

Unpacking Fluency-Oriented Instruction

Fluency instruction seems to be a promising approach to teaching children in the confirmation and fluency stage of reading, especially those in late first and second grades, but also older children with reading problems who are disfluent. Although the basic approaches have been around for over thirty years, there are many unanswered questions. We are still not sure what the role of repetitive reading is, whether increasing the amount of reading would have similar effects, what the effects of reading texts at a range of relative difficulties are, and whether fluency instruction works by improving automatic word recognition or whether it effects perception of phrasal boundaries. These are questions worthy of exploration.

These issues all relate to the larger notion of "practice." It has been argued that practice in reading is vital to a person's development as a reader (e.g., Berliner, 1981). But what kind of practice is needed? We know that time spent reading is an important variable in learning to read, but time spent reading what? Is reading difficult material more useful than reading easy material? Is reading the same material repeatedly as useful as reading new material? Does repeated reading lead to improved self-monitoring and correction? Are there different effects for oral and silent reading?

From this review, we have come to view fluency instruction as successful in improving the reading achievement of children at a certain point in their reading development. However, we have seen relatively little of this instruction in the schools. To help more readers move from labored decoding to the construction of meaning, we consider it to be important that educators integrate these techniques in the classroom more frequently.

Appendix A: Repeated Reading Studies

Study	Criteria (Multiple Readings vs. Criteria)	# of Subjects Per Treatment Group	Grade of Subjects	Reading Level of Subjects	Initial Fluency of Subjects	Material Read	Fluency Results	Microprocessing Comprehension Results	General Comprehension	Notes
Bell, Markley, & Yonker (1990)	Set number of readings (3)	17	2nd-3rd	Average	Not given	Instructional level	Improvement over time			No effect on attitudes
Bohlen (1988)	Criterion (until s/he could read the text fluently)	5	3rd	Below gr. level (2.5-3.4)	Not given	Instructional level	No significant improvement over time			Small n, good effect size
Carver & Hoffman (1981)		12	High school	4th-6th gr. level		2nd-9th	Improvement over time	Improvement over time	No improvement over time	
Dahl (1979)	Criterion (100 wpm)	8	2nd	Below gr. level	Disfluent; 35-60 wpm	Difficult	T > C	T > C	T = C	No effect on tachistoscopic recognition of words (automaticity)
Dowhower (1987)	Criterion (100 wpm)	17	2nd	Average	Disfluent; <50 wpm	2nd	Improvement over time	Improvement over time (4/5 groups)		
Hannah (1994)	Criterion	10	2nd	Low achieving	Disfluent	Not given	T = C	T = C		
Herman (1985)	Criterion (85 wpm)	8	4th-6th	2nd-17th %ile	Disfluent; 35-50 wpm	Instructional level	Improvement over time	Improvement over time		
Homan, Klesius, & Hite (1993)	Set number of readings (4)		6th	Below gr. level (end 4th-beg. 5th)	Not given	Instructional level (5th gr. level)	T = C, Improvement over time	T = C, Improvement over time		
Knupp (1988)	Criterion (85 wpm)	8	4th-6th	2nd-4th gr. level (2-4 levels below placemt.)	Disfluent	45-65 wpm; 4-8 incorrect words/100; 50-75% comprehension	Improvement over time		Improvement over time	
Koch (1984)	Set number of readings (variable)	48 (36 in Repeated Reading condition)	2nd	Low achieving	Not given	Above gr. level	T > C			2x group read faster than 6x group or control
Koskinen & Blum (1984)	Set amount of time		3rd	Below average (1.7-4.5)	Disfluent	Gr. level	T > C	T > C		
Levy, Barnes, & Martin (1993)	Set number of readings	24	College	Above average	Probably high	Appropriate	Improvement over time			
Levy, Newell, Snyder, & Timmins (1986)	Set number of readings	40	College	Above average	Probably high	Appropriate	Improvement over time			
Mathes & Fuchs (1993)	Set number of readings		4th-6th	Learning disabled	Not given	Easy	T = C	T = C	T = C	

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Study	Criteria (Multiple Readings vs. Criteria)	# of Subjects Per Treatment Group	Grade of Subjects	Reading Level of Subjects	Initial Fluency of Subjects	Material Read	Fluency Results	Microprocessing Comprehension Results	General Comprehension	Notes
Mathes & Fuchs (1993)	Set number of readings		4th-6th	Learning disabled	Not given	Instructional level	T = C	T = C	T = C	
O'Shea, Sindelar, & O'Shea (1985)	Set number of readings	30	3rd	At or above gr. level	Average; 70-119 wpm	Above gr. level	Improvement over time	Improvement over time		
O'Shea, Sindelar, & O'Shea (1987)	Set number of readings	32	5th-8th	Learning disabled (3rd gr. level ave.)	Below to above ave; 34-156 wpm	Above gr. level	Improvement over time	Improvement over time		
Person & Burke (1984)	Set number of readings (3)	26	2nd-4th	Not given	Not given	Easy	T = C			
Rashotte & Torgesen (1985)	Set number of readings	12	2nd-5th	Below average	Disfluent; <65 wpm	2nd (low overlap)	T = C	T = C		Texts with high overlap produce better fluency
Rashotte & Torgesen (1985)	Set number of readings		2nd-5th	Below average	Disfluent; <65 wpm	2nd (high overlap)	T = C	T = C		
Rasinski (1990a)	Set amount of time	20	3rd	Above average		4th (above gr. level)	Improvement over time			
Simmons, Fuchs, Fuchs, Mathes, & Hodge (1995)	3 readings		2nd-5th	Learning disabled/ low performing (2nd-3rd gr. level)	Disfluent; 67 words correct per minute	Appropriate		T > C	T = C	
Stoddard, Valcante, Sindelar, O'Shea, & Algozzine (1993)	Set number of readings (7); Measurement at 1st, 3rd, & 7th reading	30	4th-5th	Low achieving	Fluent; 70 wpm	Instructional level	Improvement over time			
Tingstrom, Edwards, & Olmi (1995)	Criterion (100 wpm, no errors)	5	3rd, 4th	Low achieving	Disfluent; 40-69 wpm	Instructional level	Improvement over time	Improvement over time		Previewing improved repeated reading for 2 of 5 students
Turpie & Paratore (1994)	Set number of readings (7)	4	1st	Low achieving	Not given	Gr. level	Improvement over time	Improvement over time (2 of 4 subjects)		
van Bon, Boksebeld, Font-Friede, & van den Hurk (1991)	Set number of readings (4)	36	3rd	Learning disabled		One year above gr. level	T > C for familiar texts, but T = C for transfer texts			Compared RR to reading while listening to nonrepeated text
van der Leij (1981) Exp 1	Set number of readings (5)	9	5th-7th	1st	Not given		T = C			
van der Leij (1981) Exp. 3	Set number of readings (4)	7	5th-7th	1st	Not given		C > T; T = C			

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Study	Criteria (Multiple Readings vs. Criteria)	# of Subjects Per Treatment Group	Grade of Subjects	Reading Level of Subjects	Initial Fluency of Subjects	Material Read	Fluency Results	Microprocessing Comprehension Results	General Comprehension	Notes
Weinstein & Cooke (1992)	Criterion (90 wpm)	4	2nd-5th (age 7-10)	Below average (1-1.3)	Disfluent	1st (on level)	Improvement over time			No difference between criteria
Weinstein & Cooke (1992)	3 successive improvements	4	2nd-5th (age 7-10)	Below average (1-1.3)	Disfluent	1st (on level)	Improvement over time			
Young, Bowers, & MacKinnon (1996)	Set number of readings (3)	10	5th	Low achieving	Not given	Instructional level	T > C			

Appendix B: Assisted Reading Studies

Study	Criteria (Multiple Readings Vs. Criteria)	# of Subjects per Treatment Group	Grade of Subjects	Reading Level of Subjects	Initial Fluency of Subjects	Material Read	Fluency Results	Microprocessing Comprehension Results	General Comprehension	Notes
Carbo (1978)		8	2nd-6th	Learning disabled	Not given	Difficult	Improvement over time			
Chomsky (1976)	Criterion ("achieve fluency")	5	3rd	Below gr. level	Disfluent	Difficult	Mean gain lower than expected (.60 in 1 yr)		Mean gain lower than expected (.75 in 1 yr)	
Dowhower (1987)	Criterion (100 wpm)		2nd	Average	Disfluent; <50 wpm	2nd	Improvement over time	Improvement over time (2/5 groups)		
Eldredge (1990)	Criterion (until they could read it expressively w/o teacher assistance)	18	3rd	Low achieving	Not given	3rd-6th gr. level readability			T > C	Also significant effect found on Gates-McGinitie Vocabulary
Gardner (1965)			5th-8th	Below gr. level					T > C	
Gilbert, Williams, & McLaughlin (1996)	Set number of readings (4)	3	1st-2nd	Learning disabled	Low (28-58 wpm)	Unclear	Improvement over time			
Heckelman (1969)		24	7th-10th	3 years below gr. level		Unclear			Improvement over time	Growth in Oral Reading Accuracy as well
Hollingsworth (1970)	Set amount of time	8	4th	Average	?	Varied from 1 yr below to 1 yr above gr. level	T = C	T = C		
Hollingsworth (1978)	Set amount of time	20	4th-6th	Below average		Varied from 1 yr below to 1 yr above gr. level			T > C	
Langford, Slade, & Burnett (1974)		2	4th, 6th	Below average	Disfluent		Improvement over time			
Mefferd & Pettegrew (1997)	Set number of readings	3	4th-5th	Developmentally handicapped	Low (14, 48, & 89 wpm)	Above gr. level	Improvement over time	Improvement over time		
Rasinski (1990a)	Set amount of time	20	3rd	Above average		4th (above gr. level)	Improvement over time			
Richek & McTeague (1988)	Set number of readings	37	2nd-3rd	Chapter 1	Not given	Difficult	T > C		T > C	
Strong & Traynelis-Yurek (1983)	Not given	26	2nd-6th	Not given			T = C			

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Study	Criteria (Multiple Readings Vs. Criteria)	# of Subjects per Treatment Group	Grade of Subjects	Reading Level of Subjects	Initial Fluency of Subjects	Material Read	Fluency Results	Microprocessing Comprehension Results	General Comprehension	Notes
Young, Bowers, & MacKinnon (1996)	Set number of readings (3)	10	5th	Low achieving	Not given	Instructional level	T > C			

Notes

1. It is important to note that the exact nature of what children learn prior to formal instruction is highly dependent upon the sociolinguistic community and culture in which they participate (Heath, 1983; Purcell-Gates, 1996; Snow, Barnes, Chandler, Goodman, & Hemphill, 1992).

2. Although the first and fourth phases are often referred to as *logographic* and *orthographic*, respectively (Frith, 1985), Ehri argues that early readers do not read words like mature readers of logographic languages. Thus, she suggests that the word "logographic" is misleading. Similarly, the word "orthographic" has developed a variety of meanings, making it too imprecise a term to be used here.

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About CIERA

The Center for the Improvement of Early Reading Achievement (CIERA) is the national center for research on early reading and represents a consortium of educators in five universities (University of Michigan, University of Virginia, and Michigan State University with University of Southern California and University of Minnesota), teacher educators, teachers, publishers of texts, tests, and technology, professional organizations, and schools and school districts across the United States. CIERA is supported under the Educational Research and Development Centers Program, PR/Award Number R305R70004, as administered by the Office of Educational Research and Improvement, U.S. Department of Education.

Mission. CIERA's mission is to improve the reading achievement of America's children by generating and disseminating theoretical, empirical, and practical solutions to persistent problems in the learning and teaching of beginning reading.

CIERA Research Model

The model that underlies CIERA's efforts acknowledges many influences on children's reading acquisition. The multiple influences on children's early reading acquisition can be represented in three successive layers, each yielding an area of inquiry of the CIERA scope of work. These three areas of inquiry each present a set of persistent problems in the learning and teaching of beginning reading:

CIERA INQUIRY 1
Readers and Texts

Characteristics of readers and texts and their relationship to early reading achievement. What are the characteristics of readers and texts that have the greatest influence on early success in reading? How can children's existing knowledge and classroom environments enhance the factors that make for success?

CIERA INQUIRY 2
Home and School

Home and school effects on early reading achievment. How do the contexts of homes, communities, classrooms, and schools support high levels of reading achievement among primary-level children? How can these contexts be enhanced to ensure high levels of reading achievement for all children?

CIERA INQUIRY 3
Policy and Profession

Policy and professional effects on early reading achievement. How can new teachers be initiated into the profession and experienced teachers be provided with the knowledge and dispositions to teach young children to read well? How do policies at all levels support or detract from providing all children with access to high levels of reading instruction?

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